

III. FUTURE CONDITIONS

The Study Team evaluated future conditions taking into consideration growth in background traffic and traffic generated by new and proposed developments in the study area. The background traffic and new development traffic was added to existing traffic counts to determine future traffic volumes.

BACKGROUND GROWTH

The calculated growth rate used for background traffic was 1.0 percent per year. This rate accounts for regional growth as well as significant development growth in the area adjacent to the study area.

BACKGROUND TRAFFIC VOLUMES

All balanced traffic volumes were grown by 1.0 percent per year to determine background traffic volumes for the year 2012, the chosen future analysis year for the Connecticut Avenue Transportation Study. Figures 21 and 22 show 2012 background levels of traffic for AM and PM peak hours and for weekday evenings (6:30-7:30 PM) and Saturdays, respectively.

LEVELS OF SERVICE WITH BACKGROUND TRAFFIC

Using the Synchro traffic analysis software, the Study Team evaluated traffic conditions at the thirteen intersections within the study area for 2012 conditions with background traffic. SimTraffic, Synchro's associated traffic simulation software, was used to assist in the development of a model depicting expected future traffic conditions with background traffic.

The Study Team used the SimTraffic results to calculate LOS and the delay per vehicle for the intersections in the study area for the AM and PM peak hours. Additionally, the seven studied intersections along Connecticut Avenue were also analyzed for the evening (6:30-7:30 PM) and Saturday midday peak hours.

It can be seen in Figures 23 and 24 that as expected, levels of service will degrade in 2012 with the projected growth in background traffic. Most intersections degrade by one letter grade, although there are some locations where no degradation is expected and other locations where LOS degrades by two letter grades.

Few intersections are expected to operate at LOS F during the AM or PM peak hours. These intersections are Reno Road and Van Ness Street (AM), Reno Road and Tilden Street (AM), Connecticut Avenue and Van Ness Street (PM) and Connecticut Avenue and Tilden Street (PM). Reno and Tilden (AM) and Connecticut and Van Ness (PM) are currently operating at LOS F under existing conditions.

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21.

2012 Weekday Peak Hour Background Volumes

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**22. *2012 Weekday Evening (6:30-7:30 PM) and Saturday Peak Hour
Background Volumes***

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23. *AM and PM Peak Hour Levels of Service (LOS) with Background Traffic*

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**24. *Evening and Saturday Peak Hour Levels of Service (LOS) with
Background Traffic***

At the intersections of Reno Road and Tilden Street (AM) and Connecticut Avenue and Van Ness Street (PM), the increase in background growth, while causing the intersections to remain at LOS F, is expected to increase overall per-vehicle delay at these intersections by approximately 38 percent and 26 percent, respectively.

During the evening peak hour, all studied intersections on Connecticut Avenue will drop at least one letter grade, with the following intersections expected to operate at LOS F: Connecticut Avenue with Van Ness Street and Tilden Street. No intersections are expected to operate at LOS F during the Saturday peak hour, although all will degrade by at least one letter.

DEVELOPMENT TRAFFIC

With the assistance of area residents and the District of Columbia Office of Planning, the Study Team identified three new or proposed developments within the study area. These developments are as follows:

1. Sheridan School – Located at 4400 36th Street (between Yuma Street and Alton Place). This private school currently has 215 students in grades kindergarten through eight. The school is seeking to increase its enrollment to 226 students, although no submission has yet been made to the Board of Zoning Adjustment of the District of Columbia (BZA).
2. Edmund Burke School – Located at 2955 Upton Street (between Connecticut Avenue and 29th Street). This private school currently has 295 students in grades six through twelve. An application submitted on April 15, 2003 to the BZA seeks to increase enrollment of the school to 320 students (from a current total of 295) and to increase faculty to 70 (from a current total of 55).
3. 3883 Connecticut Avenue – nine-story, 166-unit residential development located on the east side of Connecticut Avenue between Sedgwick and Tilden Streets. As of the time of this study, 3883 Connecticut Avenue has been completed and is currently leasing.

TRIP GENERATION FOR OTHER AREA DEVELOPMENTS

Table 7 summarizes AM and PM peak hour traffic volume forecasts for area developments, as well as daily traffic. Table 8 summarizes evening (6:30-7:30 PM) and Saturday peak hour. Since the two schools are not expected to generate any evening peak hour or Saturday trips, only those trips generated by 3883 Connecticut Avenue are shown in Table 8. Trip generation rates for area developments were calculated based on available land use information and applying trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 6th Edition*. Additionally, the numbers of trips were adjusted to account for transit usage based on information found in *Development Related Ridership Survey II*, published by WMATA.

For the Sheridan and Edmund Burke Schools, trips were generated based on the proposed increase in student enrollment – 11 students for Sheridan and 25 students for Burke.

Table 7
Summary of AM and PM Peak Hour Trip Generation for Area Developments¹

No.	Development	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips (two-way)
		IN	OUT	TOTAL	IN	OUT	TOTAL	
1	Sheridan School	6	4	10	3	4	7	N/A ²
	<i>Transit Reduction = 0%</i>	(0)	(0)	(0)	(0)	(0)	(0)	
	Net Trips	6	4	10	3	4	7	
2	Edmund Burke School	14	9	23	7	9	16	N/A ²
	<i>Transit Reduction = 19%</i>	(3)	(2)	(5)	(1)	(2)	(3)	
	Net Trips (See Note 2)	11	7	18	6	7	13	
3	3883 Connecticut Ave.	15	62	77	45	27	72	650 (286)
	<i>Transit Reduction = 44%</i>	(7)	(27)	(34)	(20)	(12)	(32)	
	Net Trips	8	35	43	25	15	40	
Total Other Development Traffic		25	46	61	34	26	60	364

Notes:

1. The Table "Trip Generation For Area Development," included in Appendix H, presents more details on the square footage and number of units used in the calculations. It also presents detailed information on the ITE Trip Generation rates used in the calculations.
2. ITE provides no daily trip generation info for "Private School (K-12)" land use.

Table 8
Summary of Evening and Saturday Peak Hour Trip Generation for Area Developments¹

No.	Development	Evening (6:30 – 7:30 PM) Peak Hour Trips			Saturday Peak Hour Trips			Saturday Daily Trips (two-way)
		IN	OUT	TOTAL	IN	OUT	TOTAL	
3	3883 Connecticut Ave.	45	27	72	26	35	61	852
	<i>Transit Reduction = 44%</i>	(20)	(12)	(32)	(11)	(15)	(26)	(375)
	Sub-Total	25	15	40	15	20	35	477
	<i>Evening Reduction = 27%²</i>	(7)	(4)	(11)	(N/A)	(N/A)	(N/A)	(N/A)
	Net Trips	18	11	29	15	20	35	477
Total Area Development Traffic		18	11	29	15	20	35	477

Notes:

1. The Table "Trip Generation For Area Development," included in Appendix H, presents more details on the square footage and number of units used in the calculations. It also presents detailed information on the ITE Trip Generation rates used in the calculations.
2. 6:30 – 7:30 PM volume at the intersection of Connecticut Avenue and Tilden Street is 73 percent of the peak hour volume. Evening trips were calculated by taking 73 percent of the peak hour trip generation numbers for 3883 Connecticut Avenue.

TRIP DISTRIBUTIONS AND ASSIGNMENTS FOR AREA DEVELOPMENTS

Trips for the Sheridan School and 3883 Connecticut Avenue were distributed throughout the study area based on existing traffic patterns. Trip distribution for the Edmund Burke School was based on patterns described the “Edmund Burke School Transportation Management Plan Washington, D.C.”¹ (TMP) The Study Team conducted an evaluation of the Burke TMP and concluded that the traffic distributions used in the TMP accurately reflect the traffic conditions that can be expected if their submission is accepted by the BZA and their proposed changes are implemented.

The Study Team assigned the trips to the network based on the distributions described above. Estimated 2012 trip assignments are summarized in Figures 25 and 26. The intersection of Connecticut Avenue and Upton Street is expected to see the greatest increase in the number of vehicles of any study area intersection, with an additional 75 vehicles during the AM peak hour and 41 vehicles during the PM peak hour. With the exceptions of the two intersections on Linnean Avenue, the remaining studied intersections are expected to increase by approximately 15 to 40 vehicles during the AM peak hour and three to 40 vehicles during the PM peak hour. As Figure 25 shows, there are individual movements at several intersections where traffic volumes actually decrease. This reduction in traffic is due to the proposed Burke TMP, which would result in changes to the traffic patterns used by students and faculty. In most cases, a reduction in volume for one movement at an intersection is offset by an increase elsewhere and is reflected in the overall increase in Burke Traffic (18 trips in the AM peak and 13 trips in the PM peak, as noted above).

Evening peak hour trips on Connecticut Avenue are expected to increase by approximately ten trips per intersection, while the increase in Saturday peak hour trips will range from approximately ten to twenty.

TOTAL TRIP ASSIGNMENTS

In order to forecast the total number of vehicular trips that are expected to travel through the study area during the forecast year of 2012, the Study Team added the following layers of traffic volumes:

1. Existing traffic
2. Growth in background traffic
3. Trips generated by developments within the study area

Figures 27 and 28 respectively show total volumes for the study area for the AM and PM peak hours, and for the evening and Saturday peak hours.

¹ Wells & Associates, LLC, April 14, 2003

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25. *2012 Weekday Peak Hour Site Traffic Volumes*

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26. *2012 Weekday Evening (6:30-7:30 PM) and Saturday Peak Hour Site Traffic Volumes*

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27. *2012 Total Weekday Peak Hour Traffic Volumes*

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28. *2012 Total Weekday Evening (6:30-7:30 PM) and Saturday Peak Hour Traffic Volumes*

SITE IMPACTS

The Study Team evaluated the impacts of development traffic on the study area intersections. Site impacts indicate what proportion of the forecast total traffic at a particular intersection is generated by new site traffic. The Study Team calculated site impacts by dividing the additional development-generated traffic by the total forecast traffic at each intersection.

Site impacts of less than five percent are low and generally reflect negligible effects on traffic operations and delays. Site impacts between five and 15 percent are moderate and minor effects on traffic operations and delays are expected at intersections with site impacts at these levels. Site impacts of more than 15 percent are significant and generally result in significant degradation of traffic operations and increased delays. The intersections most affected by the site traffic are those located in the immediate vicinity of the development sites. Site impacts generally decrease with increased distance to the site that generates the trips.

Table 9 shows that the intersection of Connecticut Avenue and Upton Street will be impacted the most by site traffic. The impact is expected be negligible, though, with only two percent of its overall volume caused by site traffic. No other intersection will see greater than a one percent impact, while a large number of intersections will experience such a small increase in site traffic that there is no percentage impact.

Table 9
Impact of Site Traffic on Area Intersections

Intersection	2012 AM Peak Hour Site Impact	2012 AM Peak Hour Site Impact	2012 Evening Peak Hour Site Impact	2012 Saturday Peak Hour Site Impact
1. Reno Road & Albemarle St.	1%	1%	N/A	N/A
2. Reno Road & Yuma St.	1%	1%	N/A	N/A
3. Reno Road & Van Ness St.	1%	1%	N/A	N/A
4. Reno Road & Tilden St.	1%	1%	N/A	N/A
5. Connecticut Ave. & Albemarle St.	0%	0%	0%	0%
6. Connecticut Ave. & Yuma St.	0%	0%	0%	0%
7. Connecticut Ave. & Windom Place	0%	0%	0%	0%
8. Connecticut Ave. & Veazey Terrace	0%	0%	0%	1%
9. Connecticut Ave. and Van Ness St.	1%	0%	0%	1%
10. Connecticut Ave. & Upton St.	2%	1%	0%	1%
11. Connecticut Ave. & Tilden St.	1%	1%	0%	1%
12. Linnean Ave. & Albemarle St.	1%	1%	N/A	N/A
13. Linnean Ave. & Tilden St.	0%	1%	N/A	N/A

N/A – intersections were not analyzed during evening or Saturday peak hours

FUTURE LEVELS OF SERVICE WITH DEVELOPMENT TRAFFIC

Using the Synchro traffic analysis software, the Study Team evaluated traffic conditions at the thirteen intersections within the study area for 2012 conditions with background and development traffic. SimTraffic, Synchro's associated traffic simulation software, was used to assist in the development of a model depicting expected future traffic conditions with background and development traffic.

The Study Team used the SimTraffic results to calculate LOS and the delay per vehicle for the intersections in the study area for the AM and PM peak hours. Additionally, the seven studied intersections along Connecticut Avenue were also analyzed for the evening (6:30-7:30 PM) and Saturday midday peak hours.

It can be seen in Figures 29 and 30 that the small amount of development traffic has very little effect on the LOS of the studied intersections. During the AM and PM peak hours, only two intersections experience degradation in LOS. Connecticut Avenue and Van Ness Street degrades from LOS D to LOS E during the AM peak hour, while Reno Road and Tilden Street degrades from LOS D to LOS E during the PM peak hour. Due to the degradation of Reno and Tilden, the adjacent intersection of Reno Road and Van Ness Street actually improves from LOS E to LOS D during the same PM peak hour. This is due to the increased delay at Reno and Tilden. Fewer vehicles can get through this intersection, resulting in decreased delays at the adjacent intersection. No changes in LOS are expected in either the evening or Saturday peak hours.

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29. *AM and PM Peak Hour Levels of Service (LOS) with Total Traffic*

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30. *Existing Evening and Saturday Peak Hour Levels of Service (LOS) with Total Traffic*